

# METROSIM: Metroplex-Wide Flight Planning and Optimization, Phase II

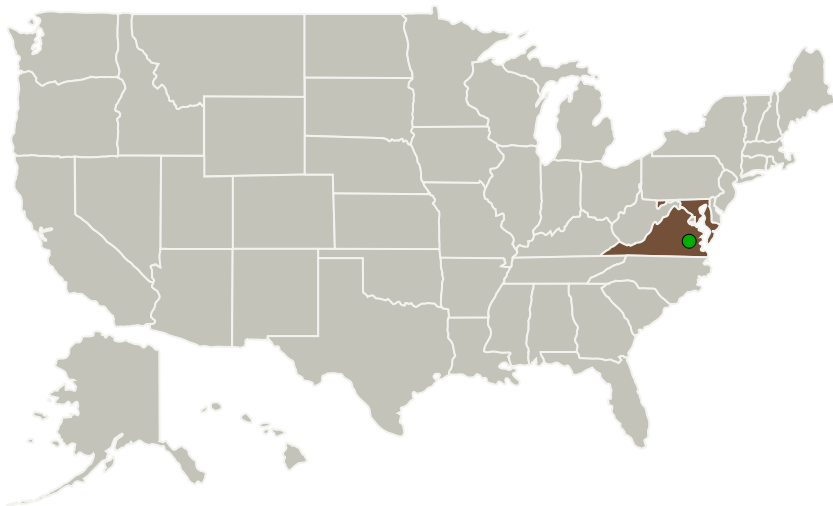
Completed Technology Project (2014 - 2017)



## Project Introduction

The key innovation of this effort is the development of a Metroplex-based arrival, departure, and surface optimization system which we call MetroSim. Linking with both the NASA-developed Traffic Management Advisor (TMA) tool, the NASA-developed System Oriented Runway Management (SORM) tool, the FAA-proposed Terminal Flight Data Management (TFDM) system, or alternatively with live or recorded flight data, MetroSim allows airport planners, traffic flow management experts, airline dispatchers, air traffic controllers, and pilots to reduce the uncertainty in operations planning, recover quickly from disruptive events, maintain high throughput even in adverse weather conditions, and handle the uncertainties associated with irregular operations. Not only are we proposing innovations that improve Metroplex flight management, but we are also proposing innovations in the way aviation software is structured. In order to manage the high volume of flights in the New York airspace effectively, and simultaneously improve the arrival stream, departure stream, and surface operations, the MetroSim architecture contains a collection of different tools, some of which are analytic computations, some of which are physics-based computations, and some of which are mathematical optimization calculations, interoperating in a distributed computational environment. Finally, the architecture allows MetroSim to be adapted to any Metroplex.

## Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Intelligent Automation, Inc.	Lead Organization	Industry	Rockville, Maryland
● Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

## Primary U.S. Work Locations

Maryland	Virginia
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## Project Transitions

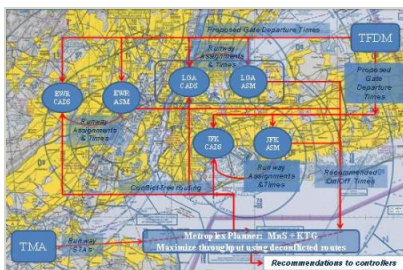
▶ **April 2014:** Project Start

✓ **January 2017:** Closed out

### Closeout Documentation:

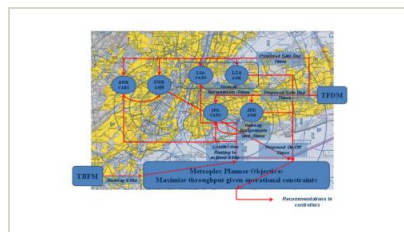
- Final Summary Chart(<https://techport.nasa.gov/file/137745>)

## Images



### Briefing Chart

METROSIM: Metroplex-Wide Flight Planning and Optimization, Phase II (<https://techport.nasa.gov/image/128640>)



### Final Summary Chart Image

METROSIM: Metroplex-Wide Flight Planning and Optimization, Phase II Project Image (<https://techport.nasa.gov/image/134451>)

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Organization:

Intelligent Automation, Inc.

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

### Program Director:

Jason L Kessler

### Program Manager:

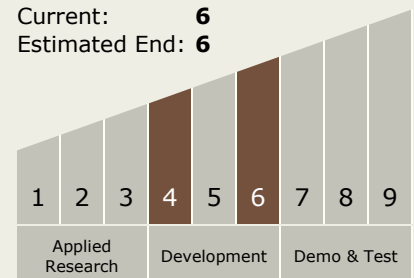
Carlos Torrez

### Principal Investigator:

Frederick Wieland

## Technology Maturity (TRL)

Start: 4  
Current: 6  
Estimated End: 6



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## Technology Areas

### Primary:

- TX16 Air Traffic Management and Range Tracking Systems
  - └ TX16.4 Architectures and Infrastructure

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System